

FIG. 9. Observed (red curve) and AMIP ensemble mean (thick black curve) cumulative Texas precipitation departures (mm) from October 2010 through August 2011. Thin black curves are for each of the 80 members of the GFS AMIP simulations. Orange curves are the cumulative precipitation departures for the subset of eight warmest Texas JJA 2011 GFS realization. Departures are computed relative to the 1981–2010 mean of the respective datasets.

perhaps also to the summer rainfall deficits themselves, as illustrated from further analysis of the very large ensemble of historical AMIP data. Shown in Fig. 10 is the model's Texas summer rainfall and precipitation sensitivity to October–May antecedent precipitation based on data from the 1950–2010 AMIP simulations, and a scatterplot is constructed from the 10% (72 sample) driest antecedents (red dots) and the 10% (72 sample) wettest antecedents. These simulations suggest several indications for land surface feedbacks, which may have contributed to the observed extreme summer conditions, although other factors (e.g., the SST evolution) could also have contributed. First, there is nearly a $+2^{\circ}\text{C}$ difference in the mean summer temperature between the dry versus the wet antecedent ensemble means. Also, the majority of dry (wet) antecedent cases experienced dry (wet) summers. Finally, there is a greater sensitivity of summer temperature to incremental rainfall departures in the environment of prior cumulative low moisture conditions compared to prior cumulative wet conditions, consistent with the nonlinearity seen in the temperature/precipitation scatterplots of Fig. 8. Recalling that the observed October–May 2011 Texas precipitation deficits were the most severe in the historical record, these results imply that the probability for a record-breaking summer heat wave in 2011 (and also a further reduction in rainfall during summer) was strongly elevated by the antecedent drought as implied also by the empirical analysis of Mueller and Seneviratne (2012).

We present two additional analyses that illustrate the significance of antecedent drought conditions of October–August 2011 on the subsequent summer temperature extremes. One is of the precipitation behavior in the subset of 2011 AMIP simulations that, by chance, produced the hot summer extremes in Texas having magnitudes close to the observed heat wave intensity. The precipitation evolution in these eight runs (the 10% hottest) is indicated by orange lines in Fig. 9. It is apparent that all but one of the hottest realizations also experienced the most severe cumulative drought conditions for *both* antecedent *and* coincident periods, and that among all 80 members their particular rainfall traces were most similar to observations. A second analysis evaluates the Texas summertime temperature signal associated with such a particular condition—both antecedent and coincident summer dryness—but extracted from the much larger suite of historical AMIP runs. Shown in Fig. 11, this estimated “drought-induced temperature signal” is about $+2^{\circ}\text{C}$, and the shift of the distribution relative to summertime temperatures unconditioned by precipitation is visibly apparent.

Finally, we consider the evidence for a human contribution to the 2011 Texas summer heat wave magnitude. The probability of hot summers has increased over many land areas as a result of a human contribution to mean warming over the last century (e.g., Jones et al. 2008). But the southern plains, sometimes referred to as a warming hole region, has been a noteworthy exception where no long-term warming has been observed (e.g.,

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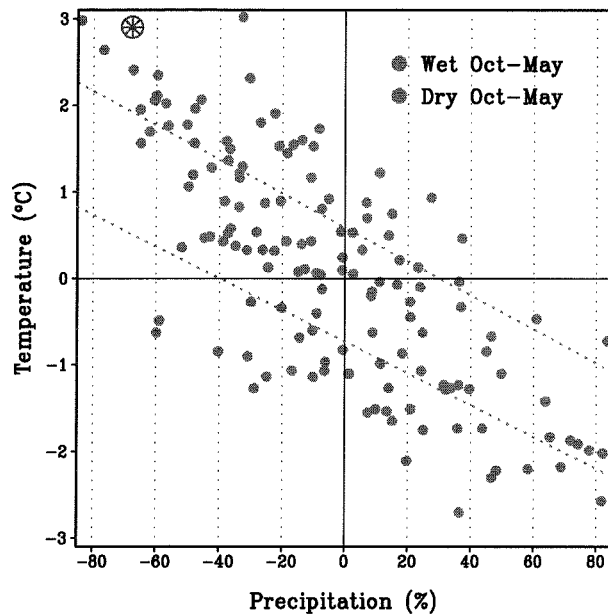


FIG. 10. The simulated relationship between JJA Texas averaged rainfall departures (% of climatology) and surface temperature departures ($^{\circ}\text{C}$) for wet (dry) Texas antecedent October–May conditions in green (red) dots. The data are based on the 12-member suite of 1950–2010 GFS AMIP simulations, and the plotted values are for the 10% wettest (driest) October–May realizations corresponding to 72 samples for each extreme.

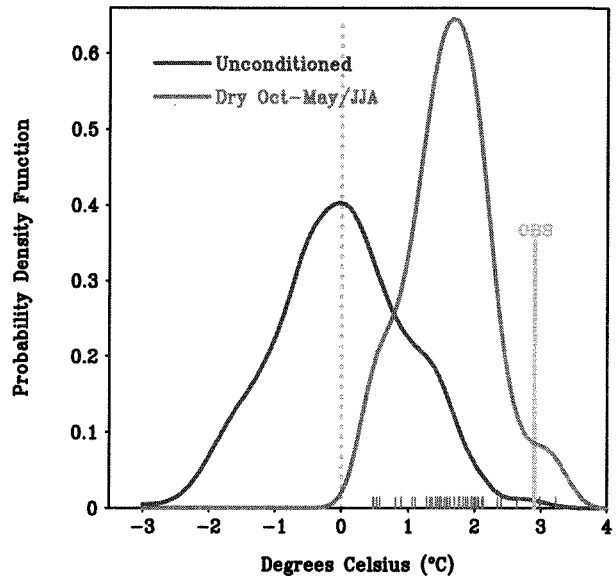


FIG. 11. PDFs of GFS simulated JJA Texas surface temperature based on a joint condition of dry antecedent and dry summer conditions (red curve), and for unconditional model realizations (blue curve). The red PDF is comprised of the 41 realizations that were among both the driest 20% October–May and the driest 20% JJA conditions. The blue PDF is the unconditioned frequency distribution comprising all 720 model realizations. Gray tick marks denote the magnitude of the observed JJA 2011 Texas temperature departure.

Kunkel et al. 2006; Knutson et al. 2006; Groisman et al. 2012), with such processes as natural variability (e.g., Wang et al. 2009), anthropogenic aerosols (e.g., Leibensperger et al. 2012), and land use change (e.g., Lawrence et al. 2012) being among various possible factors. One might thus argue that it is premature to attribute any fraction (large or small) of the heat wave intensity to effects of anthropogenic forcing in 2011, when in fact no long-term warming has been detected. Of course, to the extent that the lack of warming may be due to masking by strong natural variability rather than due to a lack of any climate change signal (e.g., Kunkel et al. 2006), then estimates of such signals via independent data (e.g., CMIP5 simulations) is valid. Some studies argue, however, that because of model biases, simulated regional climate responses to anthropogenic forcing may be unreliable over the Great Plains in summer (e.g., Pan et al. 2004). Also, long-term regional climate trends are sensitive to the patterns of SST change (e.g., Hoerling et al. 2010, 2012) and, as such, biases in CMIP SST responses could likewise contribute to differences between observed and CMIP simulated regional climate anomalies (Shin and Sardeshmukh 2011).

Yet, while acknowledging the validity of these various concerns, analysis of the time-evolving summertime

surface temperature trends over Texas based on various datasets (Fig. 12) suggests that our initial estimate of a roughly $+0.6^{\circ}\text{C}$ human-induced warming contribution to 2011 conditions (relative to a 1981–2010 reference) based on CMIP5 data alone is reasonable. The dark box-and-whisker plots show the median trend value and the spread among the 20 CMIP5 models for periods as long as 110 years (left) and as short as 30 years (right), with all periods ending in 2010. Green circles denote the observed trends. Warming is observed to emerge in recent decades, and this observed behavior is consistent with an accelerated warming trend found also in the CMIP5 simulations. This is further consistent with an accelerated summertime Texas warming trend in recent decades occurring in the AMIP simulations, shown in the light box-and-whisker plots based on the 12-member GFS historical runs. These various lines of evidence support a view that the region's summertime temperatures have been warming over the last 30- to 40-yr period, in a manner that appears to be consistent both in timing and in magnitude with anthropogenic forcing.

No long-term warming has been observed during summer over Texas for periods of analysis greater than about 50 years, however. Furthermore, there is little

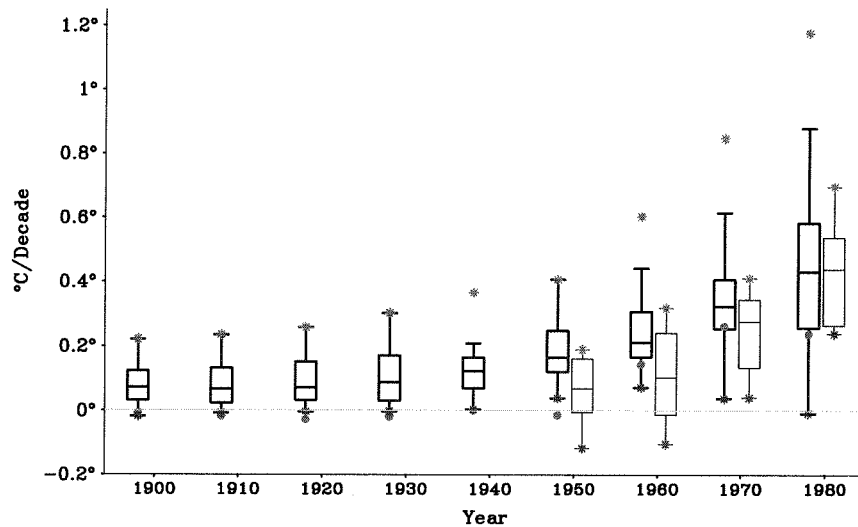


FIG. 12. Observed (green dot) and simulated (box/whiskers) trends in JJA Texas surface temperature ($^{\circ}\text{C decade}^{-1}$). Trends are computed for different beginning years from (left to right) 1901 to 1981, staggered at 10-yr increments, while the end year for all trend calculations is 2010. Thus, the longest trend period is for a 110-yr period and the shortest for a 30-yr period. Dark (light) box/whiskers display the CMIP5 (AMIP) simulation trends based on a 20-member (12-member) ensemble. The extreme values of the model simulated trends are shown by the red and blue asterisks.

consistency between the observed and CMIP5 trends over these longer time scales, with the observed trends often residing outside the range of the 20-model CMIP5 simulations. The true anthropogenic warming signal during summer over Texas that spans the entire twentieth century is thus highly uncertain given the appreciable differences between model and observations, and further research is required to understand the reasons for these discrepancies.

Some have argued that warming trends at local-to-regional scales in the past 30 years are probably largely anthropogenic (e.g., for Moscow; Rahmstorf and Coumou 2011). But such a notion risks conflating the true external signal of climate change with natural coupled ocean–atmosphere variability. In the case of Texas, if one were to embrace the observed trend value during 1981–2010 period as an estimate of the human-induced warming, for instance, then the inferred warming would be only half the magnitude of the CMIP5 ensemble mean signal. This could be justified if indeed the trends were strongly deterministic in their relationship with radiative forcing. In such a scenario, the spread among the CMIP5 model trends would be an indication of different model sensitivities (implying biases) to the forcing, while the observed trend would be the true signal of change. However, analysis of trends based on the AMIP realizations indicates that much of the spread in trends, post-1950, is actually due to random variability (see Fig. 12). Since each run of this AMIP ensemble is forced

identically by the observed SST, sea ice, and CO_2 variability, and utilizes the same model, the range of trends is solely due to atmospheric noise. Given that the amplitude of this range approximates the range among the 20 CMIP model trends, the latter is thus likely also mainly due to noise, rather than being an expression of different plausible sensitivities to anthropogenic forcing and biases. There is no reason, therefore, to assume that a single observed regional trend is also not a combination of a true signal and an appreciable noise component (e.g., Deser et al. 2012).

Based on the datasets available in this study, the only reliable estimate of the signal due to external forcing is the ensemble mean of all models, rather than any single model run or the observed trend. In this regard, it is important that the CMIP5 and AMIP median Texas warming trends are virtually identical for the 1981–2010 period. Given that the AMIP suite was forced with the actual SSTs, the agreement with CMIP5 implies that aforementioned CMIP model biases in SST simulations were either random across individual models, and thus minimized via ensemble averaging, or that the Texas summertime temperature sensitivity to such biases is low. It cannot be discounted entirely that the agreement is in part fortuitous, and that CMIP5 systematic errors in sensitivity to external forcing have opposed the effects of natural oceanic variability. Nonetheless, the agreement of CMIP and AMIP median trends may provide an independent and consistent estimate for the probable

magnitude of the human-induced mean warming of Texas summer temperatures.

d. Event probability

How did various factors operating in 2011 alter the probability of breaking the prior Texas heat wave record? In their diagnosis of the 2003 western European heat wave, Stott et al. (2004) developed a procedure for estimating how human-induced climate change affected the probability of a record event. Here we employ similar methods but broaden the scope to reveal not only how anthropogenic forcing affected event probability, but also how the particular state of 2011 global SSTs affected event probabilities. As in Stott et al. (2004), we attempt to avoid selection bias by examining the threshold corresponding to the prior observed Texas heat wave magnitude ($+1.6^{\circ}\text{C}$), rather than the particular 2011 event magnitude ($+2.9^{\circ}\text{C}$). A threshold of $+1.6^{\circ}\text{C}$ corresponds to about a 2 standard deviation departure (2σ) in observations, and is thus also more amenable to sampling using the ensemble sizes that are available to this study. For precipitation we select a threshold of -50% departure, for which there had been four prior summertime event occurrences at least as dry in the 1895–2010 observational record (Fig. 5), although this threshold is considerably less than the -70% departure during summer 2011.

The results for precipitation are summarized in Table 2, which suggests a vastly different effect of anthropogenic greenhouse gas forcing versus the 2011 SST forcing on the likelihood of extreme drought. The CMIP5 projections indicate no material change in the dry event probability relative to 1981–2010. The AMIP simulations indicate a nearly fourfold increase in event threshold exceedance, with an expected return time of 11 years during 1981–2011 becoming only about 3 years under the influence of 2011 SST states. We interpret this result as revealing mainly the strong La Niña effect on the southern plains rainfall identified in numerous previous observational and modeling studies. The apparent lack of a dry tail sensitivity in CMIP5 projections appears consistent with an overall lack of a mean rainfall change. It is interesting to note, however, that the CMIP5 projections suggest an increase in the probability of extreme wet summer seasons during 2011 (see Fig. 7). In contrast, the 2011 SST patterns severely reduce the probability of an extreme wet Texas summer, while simultaneously enhancing the probability of severe drought.

Table 3 shows how the probability of exceeding a 2σ heat wave threshold had changed in 2011. The absolute value of the threshold varies somewhat among the model simulations because their different standard

deviations for temperature (whereas rainfall standardized departures were more similar). The table indicates that while anthropogenic forcing likely increased the probability of a heat wave eclipsing a prior record value (from 3% to 6%), the event probability was increased much more by the particular global SST conditions occurring in 2011. In the AMIP runs, the probability of exceeding a 2σ heat wave is estimated at 23% during summer 2011, compared to only a 4% probability during 1981–2010. The AMIP runs present a consistent picture for the joint change in extreme drought and heat wave probabilities with both conditions greatly increasing their probabilities in 2011, physically consistent with the known strong influence of dryness on summertime temperature (e.g., Mueller and Seneviratne 2012). By comparison, the CMIP5 simulations reveal a different physical process operating. The effects of greenhouse gas and aerosol forcing act to increase summertime temperatures through radiative processes while not materially altering mean precipitation and thus not initiating the strong surface energy balance responses and feedbacks that lead to heat waves during droughts as occurred in 2011.

The current analysis has been conducted with respect to a 1981–2010 reference, and in this sense all of the changes in probabilities can be meaningfully intercompared among various model simulations. One might, nonetheless, raise the more general question of how anthropogenic forcing has changed the event probability in 2011, but relative to an earlier reference frame such as pre-industrial climate. We address this question further in section 4. Here it is important to recognize the difficulty in interpreting the meaning of such analysis given the lack of an overall century-scale temperature trend over Texas. While our analysis supports a view that most of the potential summertime Texas warming due to human influences has likely emerged after 1980, there are large discrepancies between CMIP and observed warming trends over longer periods.

e. Predictability

How predictable was the extreme event of 2011, and can our scientific understanding of the causes for this extreme event be utilized to improve the effectiveness of societal responses via early warnings (e.g., Lubchenco and Karl 2012)? The results from the NOAA/National Centers for Environmental Prediction (NCEP) operational prediction systems are shown in Fig. 13. These predictions warned in advance that Texas—more so than any other region over the United States in summer 2011—was especially prone to having a hot/dry summer as a consequence of the particular meteorological, oceanic, and soil moisture settings in May 2011 from which

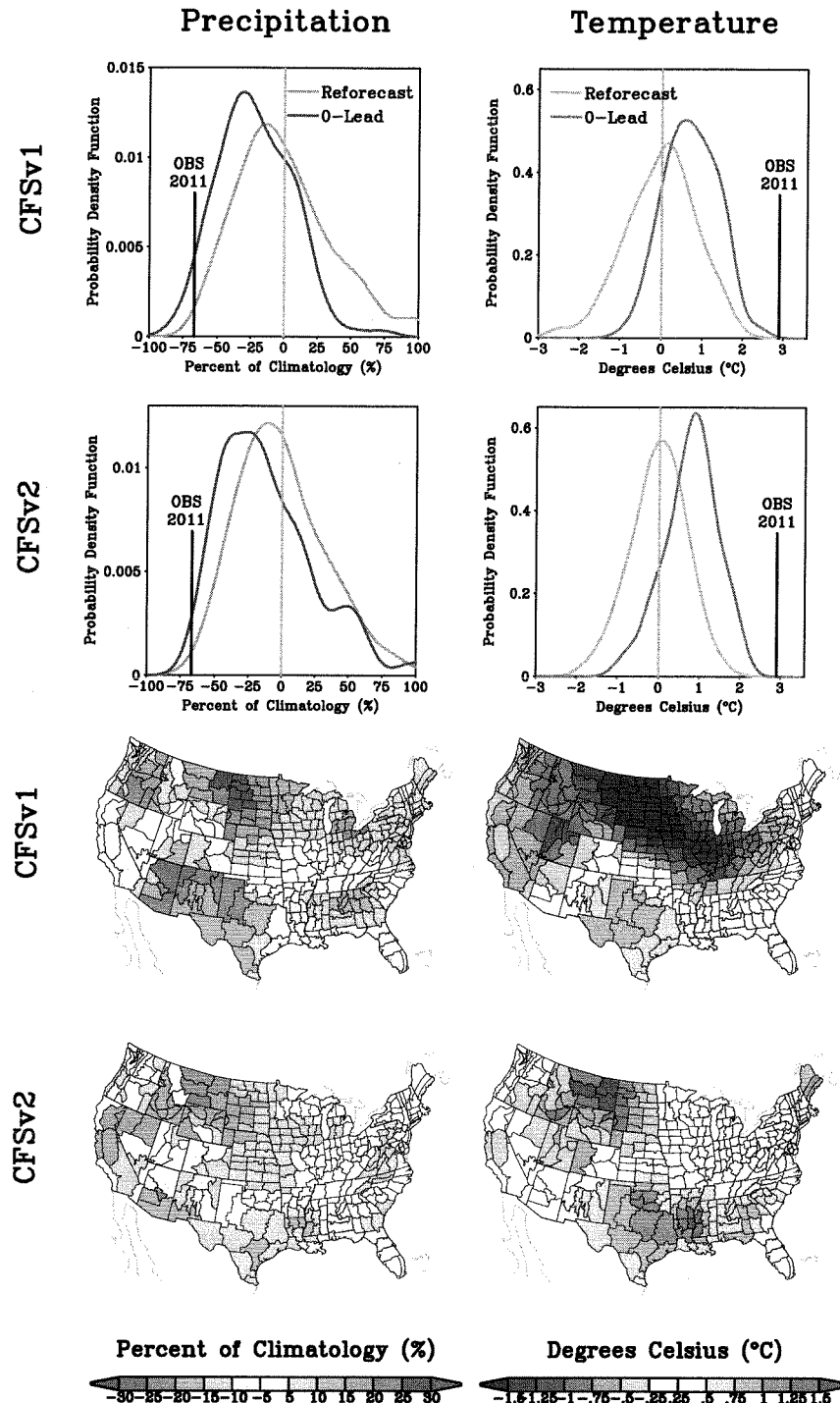


FIG. 13. NOAA/NCEP operational dynamical predictions of JJA seasonally averaged (left) precipitation anomalies (% of climatology) and (right) surface temperature anomalies ($^{\circ}\text{C}$). PDFs are as in Fig. 7. Spatial anomaly maps are as in Fig. 6, but based on the ensemble mean of the CFS forecasts. For CFSv1, 435 (124) individual hindcasts (forecasts) are used for 1981–2009 (2011). For CFSv2, 696 (124) individual hindcasts (forecasts) are used for 1982–2010 (2011). All hindcasts and forecasts are based on initializations from May analyses, and anomalies are calculated relative to the period of available hindcast climatologies for all May initializations.

each forecast system was initialized. Nonetheless, the distributions of model realizations still affirms the rare and highly unlikely outcome that was observed over Texas, even when the prediction systems were constrained by observations as near to the event as May 2011. The predicted mean temperature anomalies averaged for Texas were $+0.7^{\circ}$ and $+0.8^{\circ}\text{C}$ and the mean predicted precipitation departures were -22% and -9% , for CFSv1 and CFSv2, respectively. CFSv2 forecasts begun even earlier, based on April 2011 initializations, also consistently predicted elevated summer temperatures across the southern Great Plains (Luo and Zhang 2012).

While recognizing the rarity of 2011 event occurrences within the ensemble of CFS predictions, the changes in probability of exceeding prior record values was greatly elevated in both systems relative to their event frequencies in the hindcast period. Based on analysis of the PDFs in Fig. 13, Table 2 summarizes the estimated frequencies and return periods for summer rainfall less than 50% of the models' climatological rainfall (note from Fig. 5 that four such occurrences were observed during 1895–2011). The event likelihood in 2011 predictions roughly doubled, and an event of this intensity is estimated to have an 8-yr return period for the 2011 initialized conditions compared to a 20-yr return period during the hindcast period of 1981–2010. For a heat wave magnitude threshold roughly equal to the prior observed Texas summertime record, the predicted probability for 2011 more than tripled relative to the overall probability in the hindcast period.

A more detailed analysis of the dynamical predictions will be the subject of a separate study, though a few additional features of the predictions are worthy of mention here. First, the magnitude of summer rainfall departures is more than twice as large in CFSv1 compared to CFSv2, yet the two predictions produce similar mean warming over Texas. While recognizing numerous fundamental differences in these models that could have bearing on Texas climate variability, one notable difference is that CFSv2 includes time-varying CO_2 and thus includes a factor contributing to warming that is absent in CFSv1. Second, although both prediction systems were initialized with the May 2011 soil moisture conditions, and thus in principle incorporated the full intensity of the cumulative antecedent observed drought, the uninitialized AMIP simulations (using GFSv2) yield warmer and drier summer conditions. Reasons for this difference are not entirely known, although substantial errors in the CFS SST forecasts for June–August (not shown) appear to have forfeited some SST impacts on the summertime Texas extremes that were incorporated in the AMIP forcing with observed SSTs. Finally, no

formal verification of the predicted changes in extreme event thresholds has been presented herein, and indeed such an undertaking will be difficult given the rare nature of such extreme events. In the interim, large multimodel approaches will be essential that can provide some indication of confidence and uncertainty based on model reproducibility.

4. Summary and concluding remarks

Through a physically based analysis of observations and climate models, this study sought to identify the causes for and the predictability of the extreme U.S. drought and heat wave of 2011, whose epicenter was Texas but whose extent consumed adjacent southern plains states as well. Placing the event within a climatological context revealed no appreciable century-long change in summer temperature and an increase in rainfall over Texas. Thus, no strong evidence for a detected change toward either hotter or drier summers was found for Texas specifically, consistent with prior studies revealing the central and southern United States to be a “warming hole” region overall (Kunkel et al. 2006; Groisman et al. 2012). Our study demonstrated that the principal physical process contributing to the record setting heat wave magnitude was the occurrence of a commensurate extreme precipitation deficit, both during the preceding winter/spring, and continuing during summer 2011. Our diagnosis of climate simulations further confirmed that the probability of record setting summer temperatures over Texas in 2011 was considerably elevated by the condition of antecedent rainfall deficits (dry soils), consistent with empirical studies on shifts in probabilities for hot summers conditioned by precipitation deficits (Hirschi et al. 2011; Mueller and Seneviratne 2012).

The paper addressed the underlying causes for the precipitation deficits, demonstrating from diagnosis of AMIP simulations that much of the antecedent and summer precipitation deficits were reconcilable with the region's sensitivity to the particular global SST patterns during 2011. Various lines of evidence indicated that the drought-producing SST forcing was primarily associated with a naturally varying state of the oceans, especially related to La Niña conditions consisting of a cold tropical east Pacific Ocean to which numerous prior observational modeling studies have shown strong southern plains rainfall sensitivity. Analysis of AMIP simulations also revealed a fourfold increase in the 2011 probability (relative to chances during 1981–2010) that Texas summertime rainfall would be lower than 50% of normal. In contrast, our diagnosis of CMIP5 projections for 2011 revealed no change in either seasonal mean Texas rainfall

or the probability of extreme dry threshold exceedances, indicating that the drought, and the appreciable fraction of observed summer heat attributed to the dryness, was primarily unrelated to anthropogenic climate change. About 80% (2.3°C) of the observed 2011 Texas heat wave magnitude of 2.9°C was estimated to have resulted from natural variability, principally through physical processes associated with the severe rainfall deficits. About 0.6°C (20%) of the heat wave magnitude relative to 1981–2010 mean was estimated to be attributable to human-induced climate change, based on analysis of time-evolving summertime surface temperature trends over Texas in observational and various model data.

Diagnosis of seasonal forecast systems revealed that much of the regional pattern and an appreciable fraction of the magnitude of both the summertime Texas rainfall deficits and heat wave were predictable from May 2011 initializations. These predictions for 2011 indicated appreciably elevated probabilities of exceeding prior record heat wave and severe drought thresholds relative to the hindcast period of 1981–2010. They captured much of the change in event probabilities identified in the retrospective AMIP simulations which were uninitialized, but were forced with the actual observed ocean conditions.

This attribution study had a purpose and goal considerably broader than just an assessment of the role of overall human-induced climate change, and examined causes more generally with a goal to advance predictive understanding. Thus, to the extent that natural variability played a key role in the extreme event (as it did in 2011), we attempted to reconcile the characteristics and features of the underlying natural processes with a capacity to predict their evolution and impacts. To this end, we analyzed initialized coupled forecast systems that were part of NOAA's operational seasonal forecasting activities, the diagnosis of which was complemented by a study of uninitialized CMIP5 simulations. The use of a recent 30-yr reference period is standard procedure for expressing forecast anomalies in operational seasonal prediction practices, and is also the standard World Meteorological Organization (WMO) guideline for diagnosing seasonal climate anomalies in routine monitoring practices. Yet, the more narrow question of the attributable effect of overall human-induced climate change since preindustrial times is clearly also of interest.

We have conducted an additional analysis of CMIP5 simulations to assess how extreme heat wave event probabilities for preindustrial climate conditions changed in those same models but under the influence of external radiative conditions circa 2011. We determined that the mean summertime temperature increase relative to preindustrial conditions is +1.2°C from such an

analysis, double the estimated warming relative to 1981–2010. Using a generalized extreme value (GEV) fit to the histogram of model simulations (not shown), a Texas heat wave magnitude equal to 2011 observations (2.9°C) is found to have roughly a 250-yr return period in these preindustrial climate simulations, whereas such an event is found to have a 10-yr return period for 2011. There are various difficulties in interpreting such an analysis and assessing its relevance to understanding observations. First, no summertime warming over Texas in the long historical record has been detected, and we emphasized in this paper that the CMIP5 model-simulated Texas warming over the last century is inconsistent with observations. In the absence of a detected warming over the long record, and in light of the uncertainty in the magnitude of climate change in this region based on CMIP5 experiments, these estimates of changes in event probability drawn solely from CMIP5 must be viewed with great caution. Second, the CMIP5 models have considerably greater summertime temperature variability over Texas than is observed, with the consequence that greater event probabilities for temperature thresholds are estimated from the models than likely exist in nature. To illustrate the considerable sensitivity of these probabilities to exceedance thresholds used, we repeated the above analysis using the observed standardized departure for 2011 (roughly 4σ , or 5°C for model equivalent values), rather than employing the observed heat wave of 2.9°C as the threshold. The GEV analysis of model simulations for 2011 then implies a roughly 350-yr return period, far different from the approximately 10-yr return period estimated when using the observed heat wave magnitude as a threshold value. In this latter analysis based on standardized departures, one would draw the conclusion that a heat wave event of the intensity of 2011 was indeed a very rare occurrence.

Ultimately, the question of greatest concern is whether a drought/heat wave as severe as occurred over Texas in 2011 can be anticipated. Our results have some implications for addressing such a concern. First, the results of this analysis provide evidence for a considerable seasonal predictability of an event of the type observed during 2011 owing to the impact of slow modes of ocean variability associated with the El Niño/La Niña phenomenon (and perhaps also Atlantic SSTs). As such, a capability for useful early warning several seasons in advance exists. Second, our analysis reveals that intrinsic variability of the atmosphere alone has the capacity to generate drought and heat waves of considerable magnitude and was important in determining the ultimate magnitude of this event. There is currently very limited predictability of such atmospheric-driven extremes at lead times beyond the time scale of useful weather

predictability of about 2 weeks. And, finally regarding the possible impacts of human-induced climate change and its connection with anticipating the 2011 event, several specific science challenges for the region of the southern plains remain. In particular, there is a need for a complete and physically based explanation for why there has been a lack of overall warming during the last century over this region; providing reasons for the overall increase in rainfall would be key to understanding such a lack of warming.

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REFERENCES

- Compo, G. P., and P. D. Sardeshmukh, 2009: Oceanic influences on recent continental warming. *Climate Dyn.*, **32**, 333–342, doi:10.1007/s00382-008-0448-9.
- Deser, C., R. Knutti, S. Solomon, and A. S. Phillips, 2012: Communication of the role of natural variability in future North American climate. *Nat. Climate Change*, **2**, 775–779.
- Dole, R., and Coauthors, 2011: Was there a basis for anticipating the 2010 Russian heat wave? *Geophys. Res. Lett.*, **38**, L06702, doi:10.1029/2010GL046582.
- Dommenget, D., 2009: The ocean's role in continental climate variability and change. *J. Climate*, **22**, 4939–4952.
- Fannin, B., cited 2012: Updated 2011 Texas agricultural drought losses total \$7.62 billion. AgriLife TODAY. [Available online at <http://today.agrilife.org/2012/03/21/updated-2011-texas-agricultural-drought-losses-total-7-62-billion/>.]
- Field, C. B., and Coauthors, Eds., 2012: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Cambridge University Press, 592 pp.
- Findell, K. L., and T. L. Delworth, 2010: Impact of common sea surface temperature anomalies on global drought and pluvial frequency. *J. Climate*, **23**, 485–503.
- Fischer, E., and C. Schär, 2010: Consistent geographical patterns of changes in high-impact European heatwaves. *Nat. Geosci.*, **3**, 398–403.
- Gent, P. R., and Coauthors, 2011: The Community Climate System Model version 4. *J. Climate*, **24**, 4973–4991.
- Greenberg, J. H., J. Bromberg, C. M. Reed, T. L. Gustafson, and R. A. Beauchamp, 1983: The epidemiology of heat-related deaths, Texas—1950, 1970–79, and 1980. *Amer. J. Public Health*, **73**, 805–807.
- Groisman, P. Ya., R. W. Knight, and T. R. Karl, 2012: Changes in intense precipitation over the central United States. *J. Hydrometeorol.*, **13**, 47–66.
- Guttman, N. B., and R. G. Quayle, 1996: A historical perspective of U.S. climate divisions. *Bull. Amer. Meteor. Soc.*, **77**, 293–303.
- Hirschi, M., and Coauthors, 2011: Observational evidence for soil-moisture impact on hot extremes in southeastern Europe. *Nat. Geosci.*, **4**, 17–21.
- Hoerling, M., T. Xu, G. Bates, A. Kumar, and B. Jha, 2006: Warm oceans raise land temperatures. *Eos, Trans. Amer. Geophys. Union*, **87** (19), doi:10.1029/2006EO190003.
- , A. Kumar, J. Eischeid, and B. Jha, 2008: What is causing the variability in global mean land temperature? *Geophys. Res. Lett.*, **35**, L23712, doi:10.1029/2008GL035984.
- , X. Quan, and J. Eischeid, 2009: Distinct causes for two principal U.S. droughts of the 20th century. *Geophys. Res. Lett.*, **36**, L19708, doi:10.1029/2009GL039860.
- , J. Eischeid, and J. Perlwitz, 2010: Regional precipitation trends: Distinguishing natural variability from anthropogenic forcing. *J. Climate*, **23**, 2131–2145.
- , —, —, X. Quan, T. Zhang, and P. Pegion, 2012: On the increased frequency of Mediterranean drought. *J. Climate*, **25**, 2146–2161.
- Hong, S.-Y., and E. Kalnay, 2000: Role of sea surface temperature and soil-moisture feedback in the 1988 Oklahoma–Texas drought. *Nature*, **408**, 842–844.
- , and —, 2002: The 1998 Oklahoma–Texas drought: Mechanistic experiments with NCEP global and regional models. *J. Climate*, **15**, 945–963.
- Jones, G. S., P. A. Stott, and N. Christidis, 2008: Human contribution to rapidly increasing frequency of very warm Northern Hemisphere summers. *J. Geophys. Res.*, **113**, D02109, doi:10.1029/2007JD008914.
- Kiladis, G., and H. Diaz, 1989: Global climatic anomalies associated with extremes in the Southern Oscillation. *J. Climate*, **2**, 1069–1090.
- Knutson, T., and Coauthors, 2006: Assessment of twentieth-century regional surface temperature trends using the GFDL CM2 coupled models. *J. Climate*, **19**, 1624–1651.
- Koster, R., and Coauthors, 2004: Regions of strong coupling between soil moisture and precipitation. *Science*, **305**, 1138–1140.
- Krakauer, N., B. Cook, and M. Puma, 2010: Contribution of soil moisture feedback to hydroclimatic variability. *Hydrol. Earth Syst. Sci.*, **14**, 505–520.
- Kunkel, K., X. Liang, J. Zhu, and Y. Lin, 2006: Can CGCMs simulate the twentieth-century “warming hole” in the central United States? *J. Climate*, **19**, 4137–4153.
- Lawrence, P. J., and Coauthors, 2012: Simulating the biogeochemical and biogeophysical impacts of transient land cover change and wood harvest in the Community Climate System Model (CCSM4) from 1850 to 2100. *J. Climate*, **25**, 3071–3095.
- Leibensperger, E. M., and Coauthors, 2012: Climatic effects of 1950–2050 changes in U.S. anthropogenic aerosols—Part 2: Climate response. *Atmos. Chem. Phys.*, **12**, 3349–3362, doi:10.5194/acp-12-3349-2012.
- Lubchenco, J., and T. R. Karl, 2012: Predicting and managing extreme weather events. *Phys. Today*, **65**, 31–37.
- Luo, L., and Y. Zhang, 2012: Did we see the 2011 summer heat wave coming? *Geophys. Res. Lett.*, **39**, L09708, doi:10.1029/2012GL051383.

- Lyon, B., and R. M. Dole, 1995: A diagnostic comparison of the 1980 and 1988 U.S. summer heat wave–droughts. *J. Climate*, **8**, 1658–1675.
- Madden, R., and J. Williams, 1978: The correlation between temperature and precipitation in the United States and Europe. *Mon. Wea. Rev.*, **106**, 142–147.
- McRoberts, D. B., and J. W. Nielsen-Gammon, 2011: A new homogenized climate division precipitation dataset for analysis of climate variability and climate change. *J. Appl. Meteor. Climatol.*, **50**, 1187–1199.
- Meehl, G. A., C. Tebaldi, G. Walton, D. Easterling, and L. McDaniel, 2009: Relative increase of record high maximum temperatures compared to record low minimum temperatures in the U.S. *Geophys. Res. Lett.*, **36**, L23701, doi:10.1029/2009GL040736.
- Moss, R. H., and Coauthors, 2010: The next generation of scenarios for climate change research and assessment. *Nature*, **463**, 747–756.
- Mueller, B., and S. Seneviratne, 2012: Hot days induced by precipitation deficits at the global scale. *Proc. Natl. Acad. Sci. USA*, **109**, 12 398–12 403.
- Namias, J., 1982: Anatomy of Great Plains protracted heat waves (especially the 1980 U.S. summer drought). *Mon. Wea. Rev.*, **110**, 824–838.
- NCDC, 2002: Data documentation for data set 9640 (DSI-9640): Time bias corrected divisional temperature–precipitation–drought index. National Climatic Data Center, 12 pp. [Available online at <http://www1.ncdc.noaa.gov/pub/data/documentlibrary/tddoc/td9640.pdf>.]
- Pan, Z., R. W. Arritt, E. S. Takle, W. J. Gutowski Jr., C. J. Anderson, and M. Segal, 2004: Altered hydrologic feedback in a warming climate introduces a “warming hole.” *Geophys. Res. Lett.*, **31**, L17109, doi:10.1029/2004GL020528.
- Rahmstorf, S., and D. Coumou, 2011: Increase of extreme events in a warming world. *Proc. Natl. Acad. Sci. USA*, **108**, 17 905–17 909, doi:10.1073/pnas.1101766108.
- Rayner, N. A., D. E. Parker, E. B. Horton, C. K. Folland, L. V. Alexander, D. P. Rowell, E. C. Kent, and A. Kaplan, 2003: Global analyses of sea surface temperature, sea ice, and night marine air temperature since the late nineteenth century. *J. Geophys. Res.*, **108**, 4407, doi:10.1029/2002JD002670.
- Saha, S., and Coauthors, 2006: The NCEP Climate Forecast System. *J. Climate*, **19**, 3483–3517.
- Schubert, S. D., M. J. Suarez, P. J. Pegion, R. D. Koster, and J. T. Bacmeister, 2004a: On the cause of the 1930s Dust Bowl. *Science*, **33**, 1855–1859.
- , —, —, —, and —, 2004b: Causes of long-term drought in the United States Great Plains. *J. Climate*, **17**, 485–503.
- , and Coauthors, 2009: A U.S. CLIVAR Project to assess and compare the responses of global climate models to drought-related SST forcing patterns: Overview and results. *J. Climate*, **22**, 5251–5272.
- Seager, R., Y. Kushnir, C. Herweijer, N. Naik, and J. Velez, 2005: Modeling the tropical forcing of persistent droughts and pluvials over western North America: 1856–2000. *J. Climate*, **18**, 4065–4088.
- Senevirante, S. I., D. Lüthi, M. Litschi, and C. Schär, 2006: Land–atmosphere coupling and climate change in Europe. *Nature*, **443**, 205–209.
- Shin, S., and P. Sardeshmukh, 2011: Critical influence of the pattern of tropical ocean warming on remote climate trends. *Climate Dyn.*, **36**, 1577–1591.
- Stott, P. A., D. A. Stone, and M. R. Allen, 2004: Human contribution to the European heatwave of 2003. *Nature*, **432**, 610–614.
- Taylor, K. E., R. J. Stouffer, and G. A. Meehl, 2012: An overview of CMIP5 and the experiment design. *Bull. Amer. Meteor. Soc.*, **93**, 485–498.
- Texas Forest Service, cited 2012: Preliminary estimation of drought economic loss in East Texas forests. [Available online at http://texasforests.tamu.edu/uploadedFiles/FRD/Economic_Loss_of_East_Texas_Forests_from_the_Drought.pdf.]
- Ting, M., Y. Kushnir, R. Seager, and C. Li, 2009: Forced and internal twentieth-century SST trends in the North Atlantic. *J. Climate*, **22**, 1469–1481.
- Wang, H., S. Schubert, M. Suarez, J. Chen, M. Hoerling, A. Kumar, and P. Pegion, 2009: Attribution of the seasonality and regionality in climate trends over the United States during 1950–2000. *J. Climate*, **22**, 2571–2590.

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN MCCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL NO. 4:14-CV-3253

Exhibit 38

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

STEPHEN McCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL ACTION NO. 4:14-cv-03253

AFFIDAVIT OF ROBERT J. EASON

STATE OF TEXAS

COUNTY OF Travis

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BEFORE ME, the undersigned authority, personally appeared Robert J. Eason, known to me personally, who after being duly sworn, deposed and stated as follows:

“My name is Robert J. Eason. I am over the age of 18; competent to make this affidavit and have personal knowledge of the facts stated herein. I am making this affidavit in connection with the cause of action entitled, *Stephen McCollum, et al. v. Brad Livingston, et al.*, Civil Action No. **4:14-cv-03253** now pending in the Southern District of Texas, Houston Division.

At the time relevant to this case, I was the Regional Director for Region II of the Texas Department of Criminal Justice. The TDCJ Hutchins Unit in Dallas, Texas was one of the facilities in Region II. I am familiar with the claims alleged by the Plaintiffs against me regarding the death of Offender McCollum in July of 2011.

During the summer months, TDCJ implements heat mitigation measures to protect offenders and staff from the summer temperatures. These measures are specified in the annual heat reminder sent each year from the TDCJ-CID administration, and also in Administrative Directive 10.64. I did not directly participate in the formulation or consideration of TDCJ heat mitigation protocols. As Regional Director, it was my responsibility to communicate with the Wardens in Region II to ensure that they knew the importance of these measures, and to provide oversight to make sure they were implemented. Though contained in an electronic message, TDCJ’s annual heat mitigation message constituted a direct written order from the leadership of

Correctional Institutions Division, and it was not considered optional. The importance of these measures were stressed during monthly meetings between myself and the Wardens of the facilities in Region II. When I would visit different facilities in my region, I would inspect the housing areas to ensure that these measures were being carried out.

During the summer of 2011, it was my belief that TDCJ's heat mitigation measures were being followed at the TDCJ Hutchins Unit. This included (but was not limited to) the distribution of ice water, access to showers, fans and ventilation. Because each TDCJ facility is slightly different, certain modifications are made to fit the facilities present on any given unit. At the Hutchins facility, there are not individual electrical outlets at the inmates' bunks to permit the use of personal fans in the dormitory areas. As a substitute, the Hutchins Unit utilized large industrial fans in the dormitory areas to provide air circulation throughout the dorm. Similarly, because the Hutchins Unit dormitories do not have windows that will open and close, a very large air-handler is installed to provide fresh air circulation.

I began my career with the Texas Department of Criminal Justice in 1989 as a correctional officer. Between 1989 and 2009, I have held the positions of Correctional Officer, Sergeant, Lieutenant, Captain, Major, Assistant Warden, and Senior Warden. I served at six different TDCJ facilities across the State of Texas during this time period. Five of these facilities contained un-air-conditioned housing areas. I have extensive experience working in these environments during the summer months and supervising the inmates who live in these environments in the summer months. During this time, I never suffered a heat-related illness while working in these environments, and I cannot recall observing any inmates or staff suffering heat related illness. While I have been made aware of occasional minor heat-related illnesses, these incidents were rare, and infrequent. Given the large numbers of inmates who live in un-air-conditioned housing, and given the large number of inmates who perform outdoor work, the rarity of such incidents led me to believe that the TDCJ's heat mitigation measures employed to protect the offenders and staff were reasonably effective at mitigating the risk due to the heat. Prior to the incident involving Larry McCollum that is the subject of this case, I cannot recall being made aware of heat-related deaths that occurred in the TDCJ system, or in any facility in which I worked or supervised prior to the summer of 2011. This also informed by belief that TDCJ's heat mitigation measures were reasonably effective.

I recall that in the summer of 2011, the temperatures were hotter than usual. I did not foresee or have any advance knowledge that the summer of 2011 would have temperatures considerably hotter than past summers until those temperatures occurred. Though this was the case, it was my belief that the mitigation measures TDCJ employed would be reasonably effective in mitigating the risk due to these higher than normal temperatures. I did not receive any communications from Warden Pringle or the Hutchins Unit administration, or receive any other information indicating that any of the TDCJ heat mitigation measures were not being carried out at the Hutchins Unit, or that the measures were not adequate to keep the inmates housed there reasonably safe from the summer temperatures.

I understand that the Plaintiffs in this case have claimed that I approved or ratified a policy or practice that caused a delay in access to care to Mr. McCollum. TDCJ has used the incident command system to respond to emergency situations for many years. I did not formulate this system. I am unaware of any incident in which this system led to an unreasonable delay in getting medical care of offenders in an emergency situation.

I have reviewed the time line of events from the night in which Mr. McCollum was taken ill that is contained in the Emergency Action Center report for this incident. The timeline correctly notes that all the times listed are approximate. This is consistent with my experience that in the middle of an emergency situation, officers do not make specific notes of the time. I did not have any personal knowledge of Mr. McCollum, or his particular circumstances until after the incident forming the basis of the lawsuit took place.

In my review of the incident, I did not find any reason to believe that the responding officers were aware that Mr. McCollum was having a heat stroke, or that they intentionally delayed his access to care. I have reviewed the testimony contained in their affidavits and statements that indicates that they believed Mr. McCollum was having a seizure. At the time, I was unaware of any training or directive from within TDCJ, or from the contract medical providers UTMB or TTUHSC, that instructs officers to immediately call 911 if they discover an offender having a seizure. I am further unaware of any instance in which the process carried out by the responding officers - ensuring the safety of the seizing offender, monitoring airway, breathing, and circulation and then contacting the off-site for further instructions – led to any harm to any offender due to a delay in care.

I understand that the Plaintiffs claim air conditioning should have been installed at the Hutchins Unit. Even as the Regional Director, I did not have the authority to unilaterally order the installation of air conditioning. Such an action would have had to be approved by my superiors on multiple levels. I did not see the need to recommend installing air conditioning based on my experience in observing the effectiveness of the mitigation measures.

From my review of documents after this incident, I am aware that Hutchins Unit temperature logs show temperatures that rise to levels listed as "heat stroke possible" or "heat stroke imminent" within the Heat and Humidity Matrix found in A.D. 10.64. I did not have personal knowledge of the specific temperatures at the Hutchins Unit at the time this incident occurred. It has always been my understanding that the terms "heat stroke possible" or "heat stroke imminent" as used in A.D. 10.64 indicate the level of danger to offenders who are working if TDCJ's heat mitigation protocols are not observed. It was never my understanding that simply reaching a temperature designated as "heat stroke imminent" meant that a heat stroke was imminent for all inmates. This would be inconsistent with my experience and knowledge regarding TDCJ's heat mitigation protocols.

Further the affiant sayeth not."

The above statements are true and accurate to the best of my knowledge.

In witness thereof, I hereto set my hand this 13 day of June 2016.



Robert J. Eason

THE STATE OF TEXAS

COUNTY OF Travis

BEFORE ME on this day personally appeared Robert J. Eason known to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

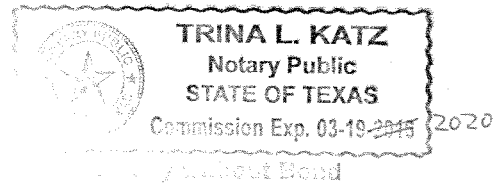
Given under my hand and seal of this office this 13 day of June 2016.

Trina L. Katz

Notary Public for the State of Texas

Printed Name: _____

My Commission Expires: _____



**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN MCCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL NO. 4:14-CV-3253

Exhibit 39

AFFIDAVIT

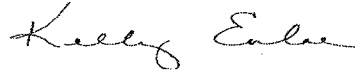
THE STATE OF TEXAS »
COUNTY OF WALKER »

BEFORE ME, the undersigned authority, on this day personally appeared **Kelly Enloe**, who, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed:

My name is **Kelly Enloe**; I am over twenty-one years of age, of sound mind, capable of making this affidavit, and personally acquainted with the facts herein stated.

I am employed as the Chairman of Classification and Records for the Texas Department of Criminal Justice - Correctional Institutions Division, and the attached is a correct representation of the time calculation and classification status regarding offender, **McCollum, Larry Gene**, TDCJ # **1721640**, within Classification and Records of the Texas Department of Criminal Justice - Correctional Institutions Division.

In witness whereof, I have hereto set my hand this the 23rd day of October, 2014.



Kelly Enloe,
Chairman,
Classification and Records

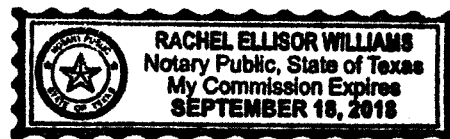
SWORN TO AND SUBSCRIBED BEFORE ME, by the said Kelly Enloe on this the 23rd day of October, 2014 to certify which witness my hand and seal of office.


NOTARY PUBLIC IN AND
FOR THE STATE OF TEXAS

**CERTIFIED
DOCUMENT**

OCT 23 2014

**TDCJ
CLASSIFICATION & RECORDS**



Notary without Bond

TEXAS DEPARTMENT OF CRIMINAL JUSTICE
SAFE PRISONS PROGRAM
Incoming Chain Interview

Offender Name: McCollum, Larry TDCJ #: 1721640 Unit: HJ
 Prior Units: CL- Prior TDCJ #'s: 1105538
 SID #: 03950494 DOB: [REDACTED] Race W / Sex M / Age 58 / Height 5'10" / Weight 330
 STG Affiliation: None AKA: None
 LID's - ☐ Yes ☒ No Extortion History - ☐ Yes ☒ No Prior Sexual Assault Allegations - ☐ Yes ☒ No
 Security Designators: _____ Other Indicators: None
 Disciplinary History: None
 County of Conviction: McLennan Current Sentence: 1 years
 Convictions: Forgery, Theft by check.
 POTENTIAL VICTIM: ☐ Yes ☒ No

I am <<State Name>>, and I am one of the coordinators for the Safe Prisons Program (SPP) here at the <<Unit Name>> Unit. What that means is that myself and one of the members of the SPP Team interviews all newly arrived offenders and we investigate all allegations of extortion and/or sexual assault.

Do you know what Extortion is? Yes. (Explain TDCJ's Extortion Policy and the consequences of participating in Extortion. You must write your name of conviction and TDCJ # on all stamps and envelopes within 1 hour of purchase and you also must maintain possession of all commissary receipts to prove authorized possession)

Are you Homosexual? ☐ Yes ☒ No

Bisexual? ☐ Yes ☒ No

Are you going to make weapons and use them? ☐ Yes ☒ No

Comments: None

Do you plan on assaulting other offenders? ☐ Yes ☒ No

Comments: None

If you are given an order to do something or to stop doing something will you comply with that order? ☒ Yes ☐ No

If you are sexually assaulted or if someone is attempting to extort something for you, or if you know of someone who has been assaulted or is being extorted, Do: Notify a member of security staff or an employee of TDCJ as soon as possible and provide as much of the following information as possible: Names and or AKA's housing locations, physical descriptions, times, places, witnesses, type of assault, (physical or sexual) or extortion (money sent to books, property, commissary, or sexual) kites, or any physical evidence you can think of.

Do you have any questions? None

Observations: No SP Concerns

Offender's Signature

TDCJ #

Date

Investigator's Signature

Date

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN MCCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL NO. 4:14-CV-3253

Exhibit 40

AFFIDAVIT

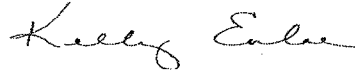
THE STATE OF TEXAS »
COUNTY OF WALKER »

BEFORE ME, the undersigned authority, on this day personally appeared **Kelly Enloe**, who, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed:

My name is **Kelly Enloe**; I am over twenty-one years of age, of sound mind, capable of making this affidavit, and personally acquainted with the facts herein stated.

I am employed as the Chairman of Classification and Records for the Texas Department of Criminal Justice - Correctional Institutions Division, and the attached is a correct representation of the time calculation and classification status regarding offender, **McCollum, Larry Gene**, TDCJ # **1721640**, within Classification and Records of the Texas Department of Criminal Justice - Correctional Institutions Division.

In witness whereof, I have hereto set my hand this the 23rd day of October, 2014.



Kelly Enloe,
Chairman,
Classification and Records

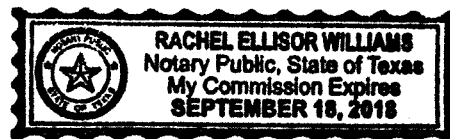
SWORN TO AND SUBSCRIBED BEFORE ME, by the said Kelly Enloe on this the 23rd day of October, 2014 to certify which witness my hand and seal of office.


NOTARY PUBLIC IN AND
FOR THE STATE OF TEXAS

**CERTIFIED
DOCUMENT**

OCT 23 2014

**TDCJ
CLASSIFICATION & RECORDS**



Notary without Bond

CSISJ004 TEXAS DEPARTMENT OF CRIMINAL JUSTICE 07/14/11
 INQUIRE OFFENSE STATE JAIL SYSTEM 15:49:26
 UNIT: MTC: N (Y OR N)
 TDCJ-ID NO: SID NUMBER: 03950494 REARREST DATE: 01 01 0001
 NAME: MCCOLLUM, LARRY GENE ADMISSION DATE: 01 01 0001
 CAUSE/COUNT: 2011-531-C2 00 DIRECT SENTENCE: Y
 VIS(Y/N): N NBR OF VIS: 000 COURT NUMBER: 054 SEQ. NO.: 002
 COUNTY OF CONV: 155 MCLENNAN
 OFFENSE DESC: FORGERY ARREST DATE: 01 23 2009 *ok*
 OFFENSE DATE: 01 23 2009 80TH DEGREE: S SENT STAT: CTO: 01 01 0001
 PLEA: G ENH: N UP-FRONT SENT LENGTH (YYMD): (DAYS):
 SENTENCE DATE: 06 23 2011 SJ SENT LENGTH (YYMD): 1 0 0 (DAYS):
 PROB/DEF ADJUD: PR MOD: PROB SENT LENGTH (YYMD):
 DAYS CREDITED: 00002 COMMENCE DATE: 06 23 2011 RESTIT: N
 CONCUR/CONSEC: C SENTENCE BEGIN: 06 21 2011
 OFFENSE CODE: 25890001 STATUTE CITATION: PC 032.210
 OFFENSE COUNTY: 155 MCLENNAN DPS INCIDENT NO.: 9025469582 A001
 REVOCATION TPE: DATE REVK: NEW CHARGE:
 ** UFJ EXP: 01 01 0001 COMM SVC REQUIRED: 0 CALC DTE: 06 21 2011 **
 **JAIL EXP: 06 19 2012 COMM SVC COMPLETED: 0 FLAT: 0 00 00 **
 **PROB EXP: 01 01 0001 COMM SVC REMAINING: 0 HB587: EDREQ: **
 **
 ENTER OPTION: TDCJ-ID NUMBER: OR SID NUMBER: PF1-HELP
 LAST OFFENSE

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN MCCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL NO. 4:14-CV-3253

Exhibit 41

DECLARATION OF **BRIAN BUSTER**

“I am over 21 years of age, of sound mind, capable of making this declaration, and personally acquainted with the facts herein stated.

“I am a custodian of records for the Project Administration Department within the Facilities Division of the Texas Department of Criminal Justice (“TDCJ”). Attached are true and correct copies of **Environmental Branch Division Level Operational Review Audits from 2011 to the present for the Hutchins State Jail, and Environmental Branch Operational Review Sergeant’s Reports from 2013 to the present for Hutchins State Jail.** These records are kept by the TDCJ in the regular course of its business activity. The entries of such records were made as a regularly conducted activity and a regular practice of the TDCJ, and were made at or near the time of the occurrence of the matters set forth by, or from information transmitted by, a person with knowledge of those matters.

“My name is Brian Buster and I am an employee of the TDCJ, a governmental agency. I am executing this declaration as part of my assigned duties and responsibilities. I declare under penalty of perjury that the foregoing is true and correct.”

Executed in Walker County, State of Texas, on the 21 day of April, 2016.



Brian Buster
Environmental Manager
Facilities Division
Texas Department of Criminal Justice

**TEXAS DEPARTMENT OF CRIMINAL JUSTICE
FACILITIES DIVISION**

Inter-Office Communication

TO: Shannon Kersh, Administrator, Monitoring & Standards
THRU: *SB for 11/22/12* Melinda Brewer, Manager, Program Administration Department
FROM: *KAF 11/15/12* Kirk Foster, Manager, Environmental Branch
DATE: November 14, 2012
SUBJECT: Hutchins Unit - Results of October 12, 2012 On-Site Survey
ACA Section D: Environmental Conditions

Light Monitoring

Min FT-CD All Locations Surveyed	Summary
22.0 ft-candles	Passed minimum standard of 20 ft-cd.

Ventilation Monitoring

Min Flow All Locations Surveyed	Summary
101.5 ft ³ /minute/occupant	Passed minimum standards of 15 ft ³ /minute/occupant. (Establishment date 1995).

4-4151 At least 15 ft³/minute/ occupant for renovation, addition, new construction 1990 or later.
4-4152 At least 10 ft³/minute/occupant for existing sources 1989 or earlier.

Daytime Noise Monitoring

Max dBA All Locations Surveyed	Summary
69.6 dBA	Passed; <i>did not</i> exceed the standard of 70 dBA.

Nighttime Noise Monitoring

Max dBA All Locations Surveyed	Summary
59.0 dBA	Failed; <i>did</i> exceed the standard of 45 dBA.

pc: Tim Ault, Senior Warden Hutchins Unit
Jeffery Pringle, Monitoring and Standards Coordinator, Region II

The information used to complete this survey form was provided to the Environmental Department by the Monitoring and Standards Department.

FIELD DATA REPORT FORMUnit: Hutchins Date: October 12-11, 2012 Analyst: Tommy Gattis**Ventilation – Offender Housing, Officer Station, Offender Dining**4-4151 At least 15 ft³/minute/ occupant for renovation, addition, new construction 1990 or later.4-4152 At least 10 ft³/minute/occupant for existing sources 1989 or earlier.

Location	# Supplies	Occupancy	Dimensions	Avg fpm
A2	3	56	24" x 48"	271
B1	3	56	24" x 48"	527
C3	3	56	24" x 48"	520
D4	3	56	24" x 48"	640
E4	3	56	24" x 48"	506
F4	3	56	24" x 48"	671
K 7 cell	1	1	6" x 6"	406
C 1-4 picket	4	1	13"	546
Dining Room	24	160	10" x 14"	723

Light Monitoring - Offender Housing (Cells, PODS, Ad Seg, PHD)

4-4146: At least 20 footcandles at desk level and in personal grooming areas.

Location	AVG Dayroom/Sink
A2	22.2/75.6
B1	53/83.8
C3	22/103.3
D4	49/88.7
E4	24/81.5
F4	22.4/91.3
K 7 cell	28.1/108.7

Noise Monitoring - Offender Housing (Cells, PODS, Ad Seg, PHD)

4-4150: 70 dBA Daytime & 45 dBA at night (A Scale)

Location	Daytime	Nighttime
A2	68.3	
B1	69.5	
C3	68.5	
D4	69.2	
E4	67.8	50.7
F4	67.4	54.3
K 7 cell	69.6	59

ATTORNEYS EYES ONLY

UNIT = Hutchins									
TEST DATE = 10/12/2012									
Building	# Supplies	Occupancy	Length (in)	Width (in)	Diameter (in)	Avg. fpm	ft ³ /min/occ		
A2	3	56	24	48		271	116.1		
B1	3	56	24	48		527	225.9		
C3	3	56	24	48		520	222.9		
D4	3	56	24	48		640	274.3		
E4	3	56	24	48		506	216.9		
F4	3	56	24	48		671	287.6		
K 7 cell	1	1	6	6		406	101.5		
C 1-4 picket	4	1			13	546	2012.1		
Dining Room	24	160	10	14		723	105.4		

Air Flow (ft³/min/occupant)

{[(vent length x width in inches)/144] x # of supplies x airflow (fpm)}/ # of occupants

{[(3.14(vent diameter in inches/2)²)/144] x # of supplies x airflow (fpm)}/ # occupants

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN MCCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL NO. 4:14-CV-3253

Exhibit 42

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN McCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL ACTION NO. 4:14-cv-03253

AFFIDAVIT OF WILLIAM L. STEPHENS

STATE OF NEVADA

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COUNTY OF CLARK

BEFORE ME, the undersigned authority, personally appeared William L. Stephens, known to me personally, who after being duly sworn, deposed and stated as follows:

“My name is William L. Stephens. I am over the age of 18; competent to make this affidavit and have personal knowledge of the facts stated herein. I am making this affidavit in connection with the cause of action entitled, *Stephen McCollum, et al. v. Brad Livingston, et al.*, Civil Action No. 4:14-cv-03253 now pending in the Southern District of Texas, Houston Division.

At the time relevant to this case, I was the Deputy Director of the Correctional Institutions Division (CID) for Prison and Jail Operations for the Texas Department of Criminal Justice. In this role, I had oversight responsibility for the security operations of over 100 TDCJ facilities across the State of Texas. I served as the direct supervisor and point of contact for six regional directors, who supervised the Wardens of the facilities in their geographic region. The TDCJ Hutchins Unit in Dallas, Texas was one of the facilities in Region II. I am familiar with the claims alleged by the Plaintiffs regarding the death of Offender McCollum in July of 2011.

During the summer months, TDCJ implements heat mitigation measures to protect offenders and staff from the summer temperatures. These measures are specified in the annual heat reminder sent each year from the TDCJ-CID administration, and also in Administrative Directive 10.64. They are also addressed policies promulgated by the Correctional Managed

Health Care Committee. Though contained in an electronic message, TDCJ's annual heat reminder message constituted a direct written order from the leadership of Correctional Institutions Division, and it was not considered optional. The importance of these measures were stressed during monthly meetings between Correctional Institutions Division Leadership and the Regional Directors, who were instructed to emphasize the importance of these measures during meetings with the Wardens they supervised with the instruction and expectation that the training and implementation of heat mitigation measures would be passed down through the chain of command on the unit level.

During the summer of 2011, it was my belief that TDCJ's heat mitigation measures were being followed at all TDCJ facilities, including the TDCJ Hutchins Unit. This included (but was not limited to) the distribution of ice water, access to showers, fans and ventilation. Because each TDCJ facility is slightly different, certain modifications are made to fit the facilities present on any given unit, but that each facility provided for heat mitigation for the inmates housed there.

I began my career with the Texas Department of Criminal Justice in 1981 as a correctional officer at the TDCJ Wynne Unit. I worked all every level of the TDCJ chain of command with regards to security. I have held the positions of Correctional Officer, Sergeant, Lieutenant, Captain, Major, Assistant Warden, Senior Warden, Regional Director, Deputy Director of the Correctional Institutions Division and Director of the Correctional Institutions Division. I served at eleven different TDCJ facilities across the State of Texas during this time period, and I have inspected many others as part of duties with TDCJ. Most of these facilities contained un-air-conditioned housing areas. I have extensive experience working in these environments during the summer months and supervising the inmates who live in these environments in the summer months. During this time, I never suffered a heat-related illness while working in these environments. Over the course of my 35 year career with TDCJ, on a few occasions I have witnessed staff or inmates become ill due to the heat. These incidents were rare, and infrequent. Given the large numbers of inmates who live in un-air-conditioned housing, and given the large number of inmates who perform outdoor work, the rarity of such incidents led me to believe that the TDCJ's heat mitigation measures employed to protect the offenders and staff were reasonably effective at mitigating the risk due to the heat. Prior to the incident involving Larry McCollum that is the subject of this case, I cannot recall being made aware of heat-related deaths that occurred in the TDCJ system, or in any facility in which I

worked or supervised prior to the summer of 2011. This also informed by belief that TDCJ's heat mitigation measures were reasonably effective. In the years following the summer of 2011, I have been made aware heat related deaths that occurred in TDCJ in past years. I did not have personal knowledge of these incidents at the time.

I did not foresee or have any advance knowledge that the summer of 2011 would have temperatures considerably hotter than past summers until those temperatures occurred. Though this was the case, it was my belief that the mitigation measures TDCJ employed would be reasonably effective in mitigating the risk due to the summer temperatures. I did not receive any communications from Regional Director Eason, Warden Pringle, or the Hutchins Unit administration, or receive any other information indicating that any of the TDCJ heat mitigation measures were not being carried out at the Hutchins Unit, or that the measures were not adequate to keep the inmates housed there reasonably safe from the summer temperatures.

I have reviewed the time line of events from the night in which Mr. McCollum was taken ill that is contained in the Emergency Action Center report for this incident. The timeline correctly notes that all the times listed are approximate. This is consistent with my experience that in the middle of an emergency situation, officers do not make specific notes of the time. I did not have any personal knowledge of Mr. McCollum until after the incident forming the basis of the lawsuit took place.

In my review of the incident, I did not find any reason to believe that the responding officers were aware that Mr. McCollum was having a heat stroke, or that they intentionally delayed his access to care. I have reviewed the testimony contained in their affidavits and statements that indicates that they believed Mr. McCollum was having a seizure. While the Hutchins Unit did not have 24/7 on-site medical coverage, under procedures in place at that time medical issues that arose during times when medical staff was not present were referred to an on-call medical provider. At the time, I was unaware of any training or directive from within TDCJ, or from the contract medical providers UTMB or TTUHS, that specifically instructed officers to immediately call 911 if they discover an offender having a seizure. I am further unaware of any instance in which the process carried out by the responding officers - ensuring the safety of the seizing offender, monitoring airway, breathing, and circulation and then contacting the off-site for further instructions - led to any harm to any offender due to a delay in care. With the benefit of hindsight, it would have been appropriate to call 911 sooner, but I have not seen any

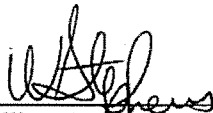
indication that any of the officers were aware of the nature of this emergency and delaying the decision to call 911 while being aware that Mr. McCollum was having a heat stroke.

From my review of documents after this incident, I have been aware that Hutchins Unit temperature logs show temperatures that rise to levels listed as "heat stroke possible" or "heat stroke imminent" within the Heat and Humidity Matrix found in A.D. 10.64. I did not have personal knowledge of the specific temperatures at the Hutchins Unit at the time this incident occurred. It has always been my understanding that the terms "heat stroke possible" or "heat stroke imminent" as used in A.D. 10.64 indicate the level of danger to offenders if TDCJ's heat mitigation protocols are not observed. It was never my understanding that simply reaching a temperature designated as "heat stroke imminent" meant that a heat stroke was imminent for all inmates. This would be inconsistent with my experience and knowledge regarding TDCJ's heat mitigation protocols.

Further the affiant sayeth not."

The above statements are true and accurate to the best of my knowledge.

In witness thereof, I hereto set my hand this 14 day of June 2016.



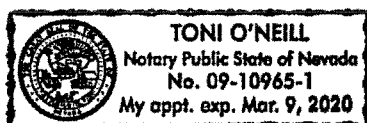
William L. Stephens

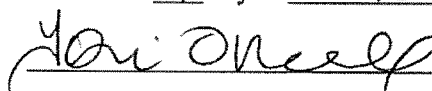
THE STATE OF NEVADA

COUNTY OF CLARK

BEFORE ME on this day personally appeared William L. Stephens known to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of this office this 14 day of June 2016.





Page 4 of 5

Notary Public for the State of Nevada

Printed Name: Toni O'Neil

My Commission Expires: 3-9-2020

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN MCCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL NO. 4:14-CV-3253

Exhibit 43

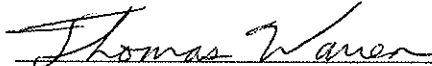
DECLARATION OF **THOMAS WARREN**

"I am over 21 years of age, of sound mind, capable of making this declaration, and personally acquainted with the facts herein stated.

"I am a custodian of records for the Risk Management Department of the Administrative Review and Risk Management Division, a part of the Texas Department of Criminal Justice ("TDCJ"). Attached is a true and correct copy of the June 2011 Employee and Offender Injuries and Workers Compensation Claims Cost Executive Summary, which is kept by the TDCJ in the regular course of its business activity. The entries of such records were made as a regularly conducted activity and a regular practice of the TDCJ, and were made at or near the time of the occurrence of the matters set forth by, or from information transmitted by, a person with knowledge of those matters.

"My name is Thomas Warren and I am an employee of the TDCJ, a governmental agency. I am executing this declaration as part of my assigned duties and responsibilities. I declare under penalty of perjury that the foregoing is true and correct."

Executed in Walker County, State of Texas, on the 16 day of June, 2016.



Thomas Warren
Manager, Risk Management
Administrative Review & Risk Management
Texas Department of Criminal Justice

TEXAS DEPARTMENT OF CRIMINAL JUSTICE

Risk Management Program



EXECUTIVE SUMMARY

EMPLOYEE AND OFFENDER INJURIES AND

WORKERS' COMPENSATION CLAIMS COST

JUNE 2011

Jackie Edwards
Director
ARRM Division
P. O. Box 99
Huntsville, Texas 77342-0099
(936) 437-4806
(936) 437-4812 (fax)
<http://www.tdcj.state.tx.us/adminrvw/adminrvw-riskmgt.htm>

Overview

The following outcome measures are provided for your review. The statistical information contained in the TDCJ Risk Management Executive Summary is derived from injury data reported by TDCJ Unit Risk Managers, in conjunction with the State Office of Risk Management (SORM) Workers' Compensation Division. SORM is the workers' compensation insurance carrier for TDCJ.

Workers' Compensation Fiscal Year-to-Date Expenditures:

June 2010: \$ 11,786,654.03

June 2011: \$ 12,956,184.15 (Increased by \$1,169,530.12)

Employee Injuries:

June 2010: 468

June 2011: 449 (Decreased by 19)

Predominate causes of employee injuries for June 2011:

- Offender assault (102 for 23%)
- Struck by or against (82 combined for 18%)
- Slips, trips, or falls (73 combined for 16%)
- Overexertion (49 for 11%)
- Caught in, on or between (36 for 8%)
- Weather related (28 for 6%)

Units reporting the most employee injuries:

- Estelle (24)
- Coffield (18)
- Polunsky (17)
- Allred (12)
- Holliday, Darrington, Crain (11 each)
- Telford, Plane, Connally, and Murray (10 each)

Offender Injuries:

June 2010: 1,292

June 2011: 1,157 (Decreased by 135)

Predominate causes of offender injuries for June 2011:

- Struck by or against (314 combined for 27%)
- Slips, trips, or falls (208 combined for 18%)
- Offender assault (182 for 16%)
- Self-inflicted (128 for 11%)
- Overexertion (93 for 8%)
- Contact w/temperature extremes (82 for 7%)

Units reporting the most offender injuries:

- Allred (38)
- Estelle (33)
- Michael and Telford (32 each)
- Eastham and Stiles (31 each)
- Wynne and Smith (26 each)
- Lewis (24)

Year-to-date employee Injury Frequency Rate (IFR): **11.0**Year-to-date claims Injury Frequency Rate (IFR): **4.1**

Employee Injury Frequency Rate (IFR): The IFR is calculated by multiplying the number of injuries by 200,000 (exposure of 100 employees working 40 hours per week for 50 weeks per year) and dividing that product by the total hours worked by all employees during the fiscal year to date (the number of employees listed on Monthly Report "Total Employee Counts by Payroll Distribution Code" {ID PAY77PDC} multiplied by the product of 168 {average hours worked per month} multiplied by the number of months worked in this fiscal year-to-date).

Claims Injury Frequency Rate (IFR): The IFR for accepted claims is calculated by multiplying the number of accepted claims by 100 (per 100 employees working 40 hours per week for 50 weeks per year) and dividing that product by the average monthly strength.

NOTE: Please notify this office if you do not wish to receive this report.

FY2011 YTD Employee Injuries

													TOTAL	FY10	FY11	
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug		Average Monthly Injuries Sep-Jun	Average Monthly Injuries Sep-Jun	Injury Frequency Rate
Region 1	79	55	80	54	55	58	53	57	54	87			632	70	63	11.6
Region 2	33	47	32	39	42	71	53	49	56	72			494	56	49	10.8
Region 3	64	59	57	46	55	67	69	39	65	81			602	60	60	11.3
Region 4	80	33	41	47	47	67	67	59	50	59			550	57	55	13.6
Region 5	64	44	56	41	41	53	56	41	48	47			491	61	49	10.4
Region 6	64	62	50	47	54	58	48	57	63	69			572	63	57	12.3
Parole *	6	11	4	6	3	12	9	8	12	3			74	7	7	3.3
Administration	35	46	24	18	26	23	31	19	19	31			272	20	27	11.2
Totals	425	357	344	298	323	409	386	329	367	449			3,687	394	369	11.0

Employee Injuries by Cause

													TOTAL	FY10	FY11	
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug		Average Monthly Injuries Sep-Jun	Average Monthly Injuries Sep-Jun	Injury Frequency Rate
Animal Bite	0	3	0	1	1	0	1	0	0	1			7	0	1	0.0
Bodily Reaction	3	0	4	4	6	3	2	3	4	5			34	5	3	0.1
Caught In/On/Btwn	32	34	20	23	24	27	23	34	29	36			282	37	28	0.8
Cont w/Chemicals	6	5	7	1	6	3	3	5	6	6			48	4	5	0.1
Contact w/Electricity	2	1	0	1	1	1	1	0	2	1			10	1	1	0.0
Cont w/Temp Extr	5	1	2	0	6	3	3	1	3	1			25	3	3	0.1
Exp Envirmt Hzd	3	6	1	5	6	3	5	1	6	4			40	5	4	0.1
Fall Different Level	12	11	15	18	12	20	21	12	9	16			146	19	15	0.4
Fall Same Level	53	38	32	40	38	130	56	34	32	36			489	51	49	1.5
Horse Related	5	2	6	1	3	1	6	6	6	12			48	4	5	0.1
Insect Bite	27	17	10	11	10	7	16	18	15	25			156	10	16	0.5
Medical Condition	18	17	9	5	8	8	6	9	13	18			111	7	11	0.3
Offender Assault	64	47	63	46	55	60	63	71	57	102			628	80	63	1.9
Overexertion	53	41	44	31	44	39	49	36	52	49			438	40	44	1.3
Slip-Not a Fall	35	28	21	24	20	32	28	26	35	21			270	26	27	0.8
Staff-Staff Assault	1	0	1	2	1	1	1	0	0	1			8	1	1	0.0
Struck Against	67	78	76	56	57	39	65	52	67	56			613	64	61	1.8
Struck By	28	20	32	28	22	18	34	16	27	26			251	29	25	0.7
Vehicular	7	6	1	1	3	4	3	3	4	5			37	5	4	0.1
Weather Related	4	2	0	0	0	10	0	2	0	28			46	3	5	0.1
Totals	425	357	344	298	323	409	386	329	367	449			3,687	394	369	11.0

* Of the 3 Parole injuries reported for this current month, 0 were attributed to Texas Board of Pardons and Paroles employees.

Employee Injuries Resulting in a Workers' Compensation Claim Accepted by SORM

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	TOTAL	FY10 Average Monthly Sep-Jun	FY11 Average Monthly Sep-Jun	Claims Frequency Rate
Region 1	42	22	42	25	23	27	26	24	19	35			285	30	29	4.4
Region 2	11	15	14	15	17	31	28	20	30	30			211	22	21	3.9
Region 3	25	17	25	22	23	30	25	17	24	43			251	24	25	3.9
Region 4	31	12	17	20	21	33	28	24	29	22			237	27	24	4.9
Region 5	33	10	24	14	13	29	26	23	16	21			209	22	21	3.7
Region 6	28	24	22	17	20	26	21	19	20	33			230	27	23	4.1
Parole	5	9	7	3	5	7	7	4	8	5			60	6	6	2.2
Administration	14	12	17	8	20	12	17	10	10	13			133	9	13	4.6
Totals	189	121	168	124	142	195	178	141	156	202			1,616	167	162	4.1

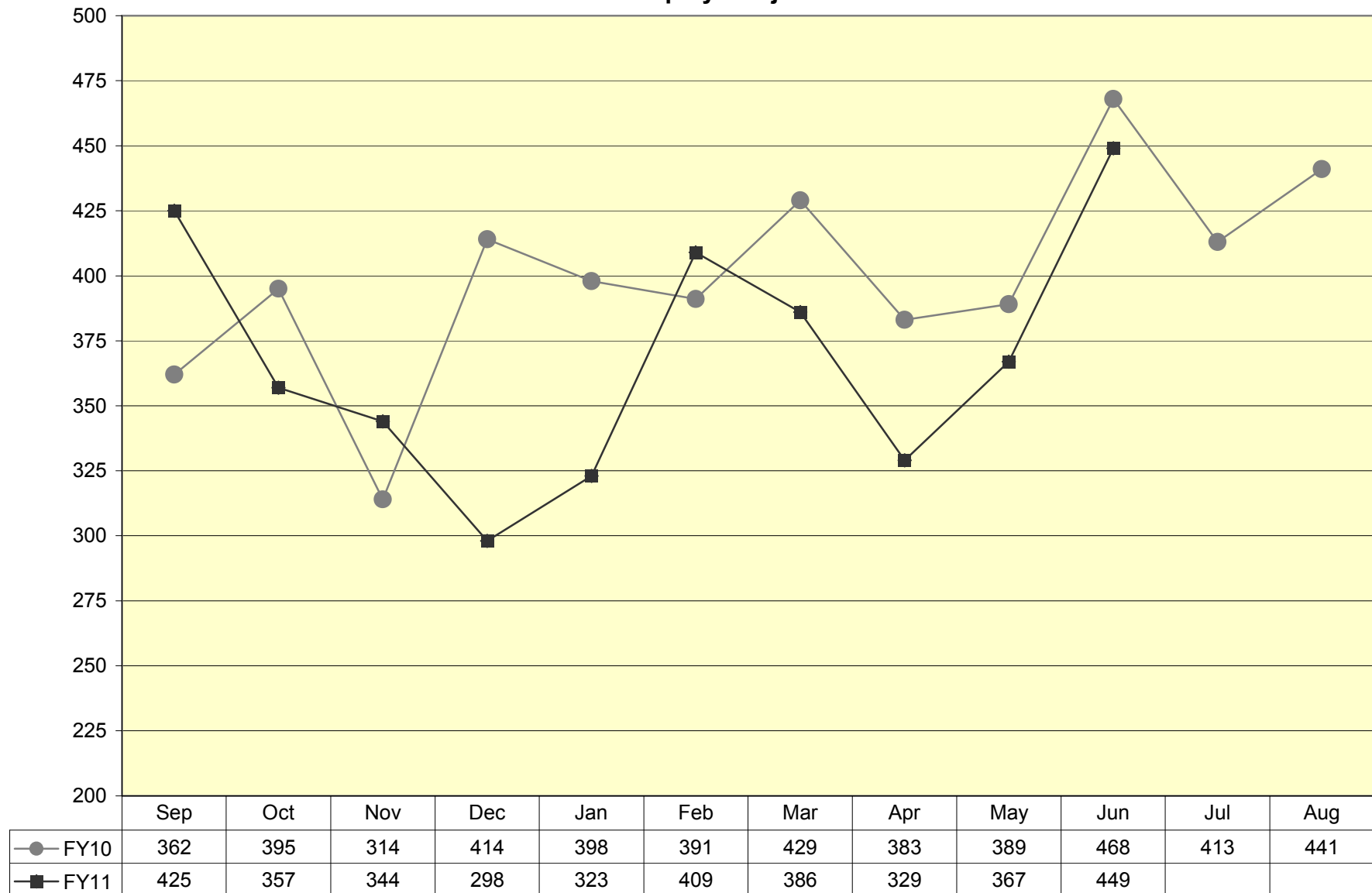
Numbers are shown in the month the claim was filed with SORM, which may not be the month in which the injury occurred.

Workers' Compensation Claims Cost Data

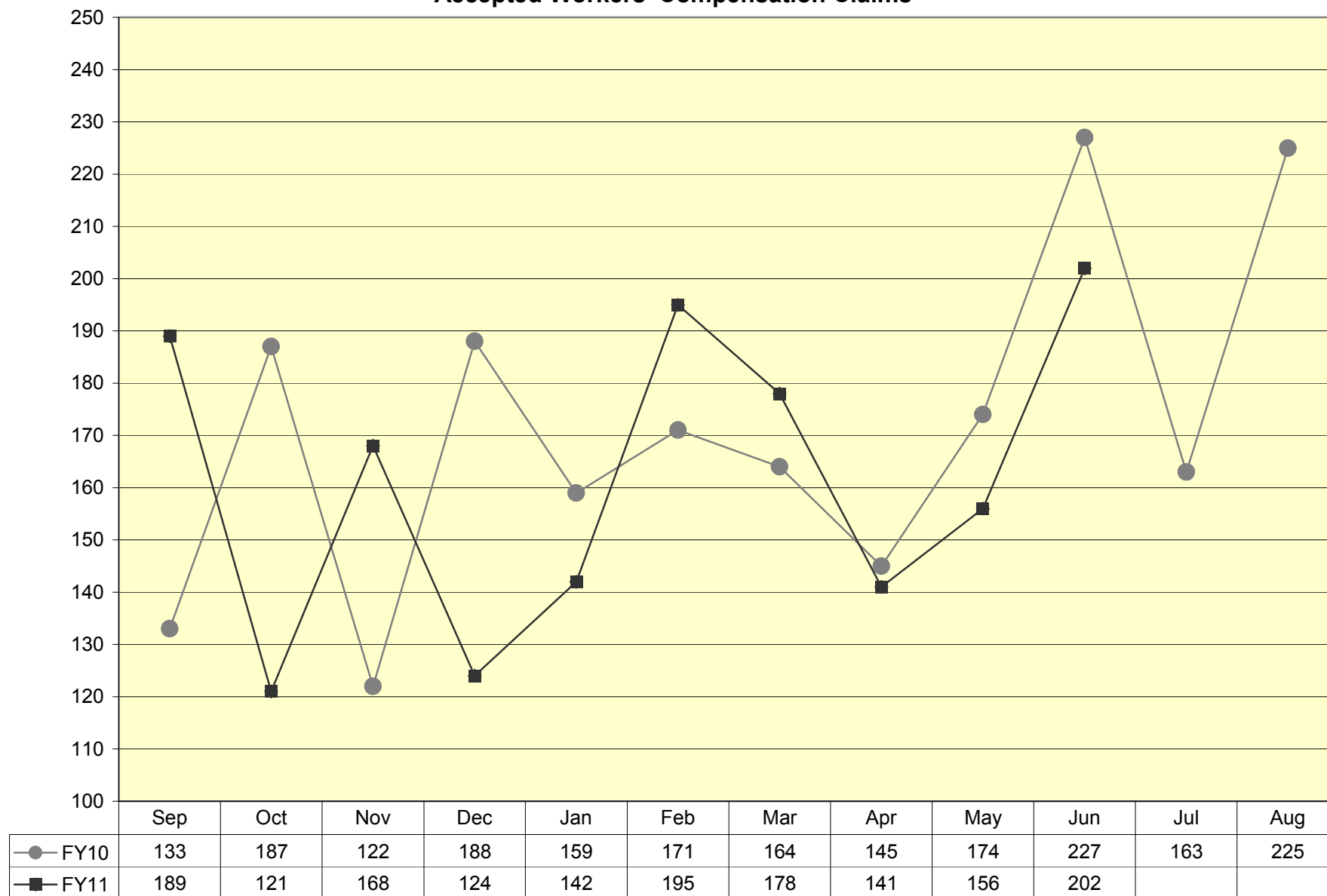
	Total Claims Cost FYTD	Total Claims Cost FYTD Filed Prior to FY10	Total Claims Cost FYTD Filed In FY10-11	Average Cost per Claim	# of Claims
Region 1	\$2,222,045.06	\$845,227.31	\$1,376,817.75	\$4,993.36	445
Region 2	\$1,930,811.77	\$654,587.25	\$1,276,224.52	\$5,378.31	359
Region 3	\$2,602,049.17	\$700,603.59	\$1,901,445.58	\$6,554.28	397
Region 4	\$1,917,570.14	\$508,715.27	\$1,408,854.87	\$4,830.15	397
Region 5	\$1,400,632.63	\$284,916.39	\$1,115,716.24	\$4,747.91	295
Region 6	\$1,504,162.43	\$661,652.58	\$842,509.85	\$4,132.31	364
Parole	\$450,322.68	\$112,043.70	\$338,278.98	\$5,700.29	79
Administration	\$928,590.27	\$269,455.27	\$659,135.00	\$5,696.87	163
Totals	\$12,956,184.15	\$4,037,201.36	\$8,918,982.79	\$5,184.55	2,499

The claims cost YTD figures reflect current FY expenditures, including claims filed in past years that are still incurring costs. They do not include past expenditures for past claims that are currently inactive and no longer incurring costs.

**Risk Management Program
Fiscal Year Comparison of
Total Employee Injuries**



**Risk Management Program
Fiscal Year Comparison of
Accepted Workers' Compensation Claims**



FY2011 YTD Offender Injuries

														FY10	FY11	
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug		Average Monthly Injuries Sep-Jun	Average Monthly Injuries Sep-Jun	Average Injuries per 100 Offenders
Region 1	133	123	115	79	88	106	118	118	164	198			1,242	120	124	0.5
Region 2	129	150	148	109	142	105	125	150	149	204			1,411	171	141	0.6
Region 3	133	124	91	82	107	91	137	144	127	141			1,177	116	118	0.5
Region 4	132	97	102	99	103	97	129	103	142	153			1,157	113	116	0.5
Region 5	190	163	154	159	162	141	186	166	170	185			1,676	199	168	0.7
Region 6	171	165	149	146	127	112	157	129	154	176			1,486	141	149	0.7
Private Fac	134	137	113	72	90	92	88	101	104	100			1,031	95	103	0.6
Totals	1,022	959	872	746	819	744	940	911	1,010	1,157			9,180	955	918	0.6

Offender Injuries by Cause

														FY10	FY11	
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug		Average Monthly Injuries Sep-Jun	Average Monthly Injuries Sep-Jun	Average Injuries per 100 Offenders
Animal Bite	4	5	4	2	3	1	1	3	4	6			33	3	3	0.0
Bodily Reaction	8	3	7	3	3	1	4	4	4	10			47	7	5	0.0
Caught In/On/Btwn	39	49	43	34	39	32	39	44	52	56			427	48	43	0.0
Cont w/Chemicals	17	14	11	17	13	13	8	12	6	14			125	13	13	0.0
Contact w/Electricity	1	2	0	1	0	0	1	0	2	2			9	1	1	0.0
Cont w/Temp Extr	84	79	63	48	55	63	67	61	73	82			675	70	68	0.0
Exp Envirmt Hzd	2	2	0	0	0	0	0	0	1	1			6	1	1	0.0
Fall Different Level	37	24	41	33	38	33	35	35	54	30			360	39	36	0.0
Fall Same Level	91	96	74	70	96	80	92	91	94	105			889	96	89	0.1
Horse Related	4	2	2	3	1	2	6	7	9	7			43	4	4	0.0
Insect Bite	31	18	9	4	1	3	10	3	17	18			114	10	11	0.0
Medical Condition	7	15	14	11	16	9	15	10	11	26			134	13	13	0.0
Offender Assault	137	132	146	115	138	118	121	152	145	182			1,386	137	139	0.1
Overexertion	70	65	69	52	57	48	66	64	85	93			669	67	67	0.0
Self-Inflicted	100	75	79	96	87	86	106	94	92	128			943	88	94	0.1
Slip-Not a Fall	55	65	44	37	39	48	52	60	48	73			521	48	52	0.0
Struck Against	198	193	167	126	149	137	187	162	177	181			1,677	191	168	0.1
Struck By	120	120	99	94	83	68	126	106	134	133			1,083	116	108	0.1
Vehicular	8	0	0	0	1	0	1	1	0	0			11	1	1	0.0
Weather Related	9	0	0	0	0	2	3	2	2	10			28	2	3	0.0
Totals	1,022	959	872	746	819	744	940	911	1,010	1,157			9,180	955	918	0.6

Numbers are shown in the month the injury was entered in the Risk Management Safety Incident Reporting System, which may not be the month in which the injury occurred.

Definitions of Injury Causes

Animal Bite – bite or scratch from a dog, cat, snake, rat, and other similar situations

Bodily Reaction - change in body function caused by allergic reaction, e.g., poison ivy

Caught In, On, or Between - a pinch point type injury that involves mashing or squeezing, e.g., caught finger in door, caught finger in between pulley, door shut on foot

Contact with Chemicals – splashed by liquid chemicals, dry particles inhaled, overcome by fumes of chemical agents, natural gas, vehicle exhaust, ammonia, insecticide, and other similar situations

Contact with Electricity - electrical shock from bad plug and other similar situations

Contact with Temperature Extremes - burns caused by heat or cold, e.g., burned hand in deep fryer, oven, and other similar situations

Exposure to Environmental Hazards - hazards such as radiation, exposure to infectious diseases, and other similar situations

Fall on Different Level - fall off of object that has to be climbed or stepped on, e.g., stairs, fell out of bunk, fell off picket ladder, fell stepping down from truck or trailer, and other similar situations

Fall on Same Level - fall while standing, walking or sitting, e.g., fell out of chair, slipped on wet floor and fell, tripped over some object and fell, and other similar situations

Horse Related - thrown by horse, fall off horse, and other similar situations

Insect Bite - bitten or stung by spiders, wasps, ants, unknown insects, and other similar situations

Medical Condition – resulting from pre-existing medical conditions, e.g., seizures, chest pains, dizziness, and other similar situations

Offender Assault - physically attacked by offender, hit, bit, struck by liquid, and other similar situations, or injuries resulting from attacking an offender, e.g., bruised or scraped knuckles

Overexertion - caused by body movement, sprain, strain or muscle or skeleton type injury, e.g., bending, lifting, pushing, pulling, turning, walking, and other similar situations

Self-Inflicted - suicide attempt, cutting for purposes of self-mutilation, tattooing, and other similar situations

Slip (Not a Fall) - a slip or trip causing pulled muscles or strains that does not result in a fall

Staff on Staff Assault - assault by co-worker

Struck Against - part of body hitting an object, e.g., walking into a fixed object, sticking finger with tattoo needle, bumped into rail, cut hand on wire, and other similar situations

Struck By - moving or falling object hitting the body, e.g., lid fell on arm, hit by ball, foreign object in eye, and other similar situations

Vehicular - injury received as a driver or passenger in vehicle or trailer and other similar situations

Weather Related - extremes in weather temperatures, e.g., heat exhaustion, sunburn, frostbite, and other similar situations

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN MCCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL NO. 4:14-CV-3253

Exhibit 44

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN McCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL ACTION NO. 4:14-cv-03253

AFFIDAVIT OF RICHARD C. THALER

STATE OF TEXAS

§

§

COUNTY OF WALKER

§

BEFORE ME, the undersigned authority, personally appeared Richard C. Thaler, known to me personally, who after being duly sworn, deposed and stated as follows:

“My name is Richard C. Thaler. I am over the age of 18; competent to make this affidavit and have personal knowledge of the facts stated herein. I am making this affidavit in connection with the cause of action entitled, *Stephen McCollum, et al. v. Brad Livingston, et al.*, Civil Action No. **4:14-cv-03253** now pending in the Southern District of Texas, Houston Division.

At the time relevant to this case, I was the Director of the Correctional Institutions Division (CID) for the Texas Department of Criminal Justice. In this role, I had oversight responsibility for the operations of over 100 TDCJ facilities across the State of Texas. The TDCJ Hutchins Unit in Dallas, Texas was one of the facilities in Region II. I am familiar with the claims alleged by the Plaintiffs regarding the death of Offender McCollum in July of 2011.

During the summer months, TDCJ implements heat mitigation measures to protect offenders and staff from the summer temperatures. These measures are specified in the annual heat reminder sent each year from the TDCJ-CID administration, and also in Administrative Directive 10.64. They are also addressed policies promulgated by the Correctional Managed Health Care Committee. Though contained in an electronic message, TDCJ’s annual heat reminder message constituted a direct written order from the leadership of Correctional Institutions Division, and it was not considered optional. The importance of these measures were stressed

during monthly meetings between Correctional Institutions Division Leadership and the Regional Directors, who were instructed to emphasize the importance of these measures during meetings with the Wardens they supervised with the instruction and expectation that the training and implementation of heat mitigation measures would be passed down through the chain of command on the unit level.

During the summer of 2011, it was my belief that TDCJ's heat mitigation measures were being followed at all TDCJ facilities, including the TDCJ Hutchins Unit. This included (but was not limited to) the distribution of ice water, access to showers, fans and ventilation. Because each TDCJ facility is slightly different, certain modifications are made to fit the facilities present on any given unit, but that each facility provided for heat mitigation for the inmates housed there.

I began my career with the Texas Department of Criminal Justice in 1980 as a correctional officer at the TDCJ Huntsville Unit. I worked at every level of the TDCJ chain of command with regards to security. I have held the positions of Correctional Officer, Sergeant, Lieutenant, Captain, Major, Assistant Warden, Senior Warden, Regional Director, Director of the Manufacturing and Logistics Division and Director of the Correctional Institutions Division. I served at nine different TDCJ facilities across the State of Texas during this time period, and I have inspected many others as part of duties with TDCJ. Most of these facilities contained un-air-conditioned housing areas. I have extensive experience working in these environments during the summer months and supervising the inmates who live in these environments in the summer months. During this time, I never suffered a heat-related illness while working in these environments. Over the course of my 33 year career with TDCJ, on a few occasions I have witnessed staff or inmates become ill due to the heat. These incidents were very rare, and infrequent. Given the large numbers of inmates who live in un-air-conditioned housing, and given the large number of inmates who perform outdoor work, the rarity of such incidents led me to believe that the TDCJ's heat mitigation measures employed to protect the offenders and staff were reasonably effective at mitigating the risk due to the heat. Prior to the incident involving Larry McCollum that is the subject of this case, I cannot recall being made aware of heat-related deaths that occurred in the TDCJ system, or in any facility in which I worked or supervised prior to the summer of 2011. This also informed by belief that TDCJ's heat mitigation measures were reasonably effective. In the years following the summer of 2011, I have been made aware heat

related deaths that occurred in TDCJ in past years. I did not have personal knowledge of these incidents at the time.

I did not foresee or have any advance knowledge that the summer of 2011 would have temperatures considerably hotter than past summers until those temperatures occurred. Though this was the case, it was my belief that the mitigation measures TDCJ employed would be reasonably effective in mitigating the risk due to the summer temperatures. I did not receive any communications from Regional Director Eason, Warden Pringle, or the Hutchins Unit administration, or receive any other information indicating that any of the TDCJ heat mitigation measures were not being carried out at the Hutchins Unit, or that the measures were not adequate to keep the inmates housed there reasonably safe from the summer temperatures.

I have reviewed the time line of events from the night in which Mr. McCollum was taken ill that is contained in the Emergency Action Center report for this incident. The timeline correctly notes that all the times listed are approximate. This is consistent with my experience that in the middle of an emergency situation, officers do not make specific notes of the time. I did not have any personal knowledge of Mr. McCollum until after the incident forming the basis of the lawsuit took place.

In my review of the incident, I did not find any reason to believe that the responding officers were aware that Mr. McCollum was having a heat stroke, or that they intentionally delayed his access to care. I have reviewed the testimony contained in their affidavits and statements that indicates that they believed Mr. McCollum was having a seizure. While the Hutchins Unit did not have 24/7 on-site medical coverage, under procedures in place at that time medical issues that arose during times when medical staff was not present were referred to an on-call medical provider. At the time, I was unaware of any training or directive from within TDCJ, or from the contract medical providers UTMB or TTUHSC, that specifically instructed officers to immediately call 911 if they discover an offender having a seizure. I am further unaware of any instance in which the process carried out by the responding officers - ensuring the safety of the seizing offender, monitoring airway, breathing, and circulation and then contacting the off-site for further instructions - led to any harm to any offender due to a delay in care. With the benefit of hindsight, it would have been appropriate to call 911 sooner, but I have not seen any indication that any of the officers were aware of the nature of this emergency and delaying the decision to call 911 while being aware that Mr. McCollum was having a heat stroke.

From my review of documents after this incident, I have been aware that Hutchins Unit temperature logs show temperatures that rise to levels listed as "heat stroke possible" or "heat stroke imminent" within the Heat and Humidity Matrix found in A.D. 10.64. I did not have personal knowledge of the specific temperatures at the Hutchins Unit at the time this incident occurred. It has always been my understanding that the terms "heat stroke possible" or "heat stroke imminent" as used in A.D. 10.64 indicate the level of danger to offenders if TDCJ's heat mitigation protocols are not observed. It was never my understanding that simply reaching a temperature designated as "heat stroke imminent" meant that a heat stroke was imminent for all inmates. This would be inconsistent with my experience and knowledge regarding TDCJ's heat mitigation protocols.

Further the affiant sayeth not."

The above statements are true and accurate to the best of my knowledge.

In witness thereof, I hereto set my hand this 15 day of JUNE 2016.

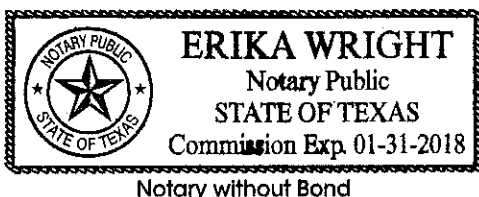

Richard C. Thaler

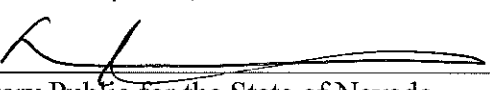
THE STATE OF NEVADA

COUNTY OF CLARK

BEFORE ME on this day personally appeared Richard C. Thaler known to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of this office this 15th day of june 2016.




Notary Public for the State of Nevada
Printed Name: Erika Wright
My Commission Expires: 01-31-18

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

STEPHEN MCCOLLUM, *et al.*,
Plaintiffs,

v.

BRAD LIVINGSTON, *et al.*,
Defendants.

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CIVIL NO. 4:14-CV-3253

Exhibit 45